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The new flora of Krakatau.—Under this title CAMPBELL[25] has published an interesting account of a visit to the island of Krakatau, which was "efficiently sterilized" in August 1883, the hot ashes and pumice completely covering the island to an average depth of 30^m. The nearest land is an island 19^{km} distant, on which the vegetation was largely destroyed; while Java and Sumatra are 35 and 45^{km} distant. TREUB visited the island in 1886 and 1897, and it was examined again in 1905 and 1906. By 1886, three years after the catastrophe, a considerable number of plants had been established, the ferns predominating in species (11) and individuals, while 9 species of seed plants were sparsely represented. The Cyanophyceae were also found to be of great importance as aids in the establishment of higher vegetation, the blackish slimy films of species of Oscillatoria coating the surface of the ashes. In 1897, while there were almost no trees, most of the island was covered by vegetation, 62 species of vascular plants being recorded (12 pteridophytes, 50 seed plants), and the ferns still predominating in the number of individuals. In the present flora 137 species have been recorded, representing all the principal groups; the ferns are no longer predominant; and the forest vegetation is rapidly encroaching toward the center of the island. There is a remarkable paucity of bryophytes, only two mosses and one Anthoceros having been recorded.—J. M. C.

Mechanism of anthers.—SCHNEIDER, having investigated the tulip carefully, objects[26] to the conclusions of STEINBRINCK that the rupture of anthers is due to the cohesion of the diminishing water with that in the cell walls. In this problem he would distinguish the mechanics of the first rupture, of the first recurvature of the valves, and of their subsequent rolling and unrolling. In Tulipa he finds the first rupture due to the pressure of the growing pollen mass—an explanation already more than a century old. He does not enlighten us as to the remaining processes; possibly they are treated in an earlier paper which we have not seen.[27]

To this paper STEINBRINCK replies at some length,[28] in the usual lively polemic style of our Teutonic friends. Though tulips were out of bloom before SCHNEIDER'S article came to his attention, his preserved material even furnishes some arguments, which are further supported by an examination of the behavior of a large number of plants of other genera. The only one in which STEINBRINCK is willing to admit that anything but cohesion mechanism plays a part, even in the first opening of the valves, is the rye. In this anther "another strong tissue tension must cooperate, because the broad cleft remains open when one throws the anther at once into water." The first rupture in this case is an explosive one, which scatters some of the pollen, and cannot be due to the cause assigned by SCHNEIDER. —C. R. B.

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[25] CAMPBELL, D. H., The new flora of Krakatau. Amer. Nat. **43**:449–460. 1909.

[26] SCHNEIDER, J. M., Zur ersten und zweiten Hauptfrage der Antherenmechanik. Ber. Deutsch. Bot. Gesells. **27**:196–201. 1909.

[27] ———, Der Oeffnungsmechanismus der Tulipanthere. Altstatten, 1908. (Inaugural Dissertation.)

[28] STEINBRINCK, C., Ueber den ersten Oeffnungsvorgang bei Antheren. Ber. Deutsch. Bot. Gesells. **27**:300–312. *figs. 7*. 1909.

Mesostrobus, a new genus of Carboniferous lycopods.—WATSON[29] has described the strobilus of a new lycopod from the Lower Coal Measures of Lancashire. It resembles Lepidostrobus, but the sporangium is only attached to the distal half of the horizontal portion of the sporophyll, and the somewhat larger ligule is set in a deep pit. A characteristic point of view is illustrated by the following quotation: "Lepidostrobus would be derived from a cone having sporophylls of this type" (*Bothrodendron mundum*, etc.) "on the adoption of an arboreal habit by the heterosporous lycopods, because radial elongation of the sporangium is the most economical way of increasing the number of spores produced, a necessity for a large tree. If this elongation takes place in the part of the sporophyll between the axis and the insertion of the sporangium, we arrive at a condition much like that of Spencerites, and from that condition we can pass through Mesostrobus to Lepidostrobus."—J. M. C.

Heating of leaves.—It has been known that the evolution of heat may be demonstrated in living plants by using seedlings and flowers, but leaves have not been considered favorable material for this experiment. MOLISCH has now shown[30] that in many cases 3–5^{kg} of leaves, placed in a basket and packed in "excelsior," show a rise in temperature amounting to 20–45° C. within 12–24 hours. The leaves are usually killed thereby, and after a fall a second rise of temperature begins, which may attain a maximum somewhat higher or lower than the first. The first evolution of heat he ascribes to the respiration of the leaves, while the second is due to the rapid development of microorganisms. The experiment is simple and worthy a place in the laboratory practice.—C. R. B.

Osmotic pressure and permeability.—TRÖNDLE records another example of what has been observed by others, namely, change in the permeability of the protoplast according to the conditions of lighting and temperature. His preliminary report[31] concerns the leaves of *Tilia cordata* and *Buxus sempervirens rotundifolia;* in the former both palisade and spongy parenchyma, in the latter only the palisade being investigated. He reports also the high values of 20–26A for the osmotic pressure as determined by plasmolysis. It is to be remembered that plasmolytic studies, such as these, in many of which NaCl was used, are of

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[29] WATSON, D. M. S., On Mesostrobus, a new genus of lycopodiaceous cones from the Lower Coal Measures, with a note on the systematic position of Spencerites. Annals of Botany **23**:379–398. *pl. 27.* 1909.

[30] MOLISCH, H., Ueber hochgradige Selbsterwärmung lebender Laubblätter. Bot. Zeit. **66** :211–233. 1908.

[31] TRÖNDLE, A., Permeabilitätsänderung und osmotischer Druck in den assimilierender Zellen des Laubblättes. Ber. Deutsch. Bot. Gesells. **27**:71–78. 1909.